

25 a formula exists for converting the lower W (T) value to z (Campbell, 1974 p66). For pairs of values when the trend is the same throughout for $n=26$, z has a probability of less than 0.1% using the formula ($n=26$ excludes zero differences). Hence a very highly significant difference will be obtained for all paired values of n above 26 when the trend is the same throughout.

Some tabulated values of W (T) use the higher value of R+ or R-. Use of the lower value means there is always the same value of W (T) which shows the maximum difference between the paired replicates i.e. 0. Use of the upper value of R+ or R- means that the values associated with maximum difference between the paired replicates varies with sample size.

Biologists do not always agree on whether data are paired or not. In case of doubt, assume data are not paired.

ACKNOWLEDGMENT

The helpful advice provided by Dr Tim Sparks is gratefully acknowledged. However, the total responsibility for the text rests with the author.

REFERENCE

Campbell, R. C. (1974, second edition). *Statistics for Biologists*. Cambridge University Press, Cambridge.

SUPPLEMENT

The application of a Mann Whitney U test to the case of non overlap on p21 of Gulliver 2011 results in a significant difference being generated, as does the application of a Wilcoxon test to the case of the trend being the same throughout in all pairs of values on p22. NB the median of 23 for 4m² machair quadrats on p21 & p23 is correct, the value in Table 1 should be 23 not 25, author's error.

The most northerly documented record of the green alga *Hydrodictyon reticulatum* (water-net) in the UK

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Strathclyde Loch is located within Strathclyde Country Park, Motherwell (NS 73290 56980) and is designated as a Sensitive Area (Eutrophic) under the Urban Waste Water Treatment Directive, and of poor ecological

potential under current Water Framework Directive (WFD) classification. A macrophyte survey of the loch was carried out in September 2011 by Alison McManus, Thomas Coy and Jan Krokowski (SEPA). This was done as part of SEPA's WFD monitoring and classification. During the survey the invasive nuisance green alga *Hydrodictyon reticulatum* (L.) Bory de Saint-Vincent, 1824 (water-net: Fig. 1) was discovered at one of the sampling points and is believed to be the most northerly documented record of this species in the UK.

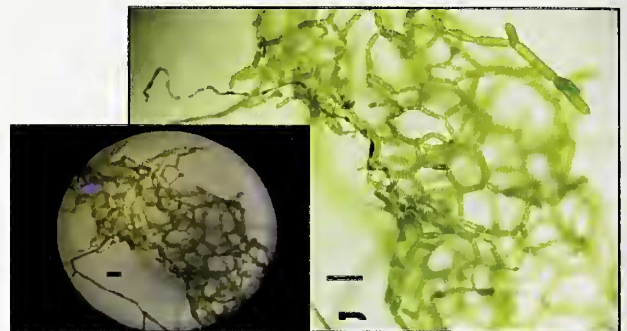


Fig. 1. *Hydrodictyon reticulatum*, Strathclyde Loch, September 2011. Scalebars 100 μ m.

This species is known as a nuisance because it can clog waterways, smother aquatic plants and fauna and adversely impact boating, fishing, swimming and tourism. The spread of this alga is believed to be a response to elevated and extended summer water temperatures (John *et al.*, 1998). The species is confined to downstream sections of waterbodies, partially due to its nutrient requirements, and populations of the alga usually only become obvious in mid-summer, suggesting a need for high temperatures (Whitton, 2000).

It appears that the water-net has become widely distributed over the past two decades and is gradually beginning to colonise more northern waterbodies. Until 2011 the most northern documented records of the species were in Dumfries and Galloway, with other undocumented reports of the species as far north as Aberdeenshire. There are also anecdotal records of the species in Castle Semple Loch, Renfrewshire. The species is well documented in rivers in the Scottish Borders and northern England, especially the Tweed, Tyne, Wear and the Swale.

ACKNOWLEDGMENTS

Thanks to Alison Bell, John Clayton, Robin Guthrie (SEPA) and Professor Brian A. Whitton (Durham University) for their records of water-net distribution.

REFERENCES

John, D.M., Douglas, G.E., Brooks, S.J., Jones, G.C., Ellaway, J. & Rundle, S. (1998). Blooms of the water net *Hydrodictyon reticulatum* (Chloroococcales, Chlorophyta) in a coastal lake in

the British Isles: their cause, seasonality and impact. *Biologia*, 53: 537-545.

Whitton, B.A. (2000). Increases in nuisance macroalgae in rivers: a review. *Verh. Int. Verein. Limnol.*, 27: 1257-125.

Hoverfly species (Diptera, Syrphidae) collected near Rowardennan, Loch Lomondside, August, 2011

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A field outing to the Scottish Centre for Ecology and the Natural Environment (SCENE) at Rowardennan, Stirlingshire, followed the Sixth International Symposium on the Syrphidae (Diptera). It was the final day of this biennial meeting, held at the Hunterian Museum, University of Glasgow, during which 72 delegates had debated and discussed the systematics, ecology and biology of the hoverflies on a worldwide scale. The field outing on 8th August was essentially an opportunity to relax after three days of being indoors listening to lectures and viewing poster presentations on research in progress. A number of the delegates took the opportunity to record the hoverfly species that could be seen around the immediate environs of the SCENE field station buildings on the Ross peninsula. The following list is the product of this effort and is a good representation of the expected fauna. The sunny weather undoubtedly helped in producing a total of 63 species, a few of which are commented on individually in the following two paragraphs.

During the symposium a new edition of distribution maps for hoverflies in the United Kingdom was launched which contains new data on altitudinal and habitat preferences and phenology. Analyses of trends have been included for both recording effort and recent changes in species' ranges (Ball, *et al.*, 2011). This publication is used here to indicate species that deserve special mention for various reasons. Some are scarce in the north of Britain such as *Cheilosia proxima* and *C. vernalis*. Species that require good quality wooded habitat include *Arctophila superbiens*, *Ferdinaudea cuprea* and *Xylota jakuatorum*. Although these three species have been recorded previously in the area it is good to know they are still resident. With similar habitat requirements, but developing as larvae in woodland fungi, are records of *Cheilosia longula* and *C. scutellata*. Generally scarce species of local note are *Ideia fasciata*, *Dasyrphus pinastri*, *Helophilus*

trivittatus, *Meliscaeva compositorum*, *M. umbellatorum* and *Scaeva pyrastris*. One of the more interesting species is *Eriozona syrphoides* which became established in Britain about 40 years ago in association with spruce plantations. These trees support an aphid species, *Cinara piceae* (Panzer), that the larvae utilise as a food source. There are only thirteen other 10Km Ordnance Survey grid squares in Scotland where it has been seen since 2000 (Ball, *et al.*, 2011).

An outstanding addition to Scotland's fauna as a result of this meeting is *Ferdinaudea ruficornis*. The latest distributional data show no known records north of Yorkshire (Ball, *et al.*, 2011). This species is regarded as rare or even endangered in many areas of mainland Europe. Like its more common sibling, *F. cuprea*, the larvae develop in sap in deciduous trees. Often, but not exclusively, these are oak trees in which this resource has been created by the tunnelling activities of the goat moth (*Cossus cossus* Linn.). The larvae of *F. ruficornis* have not been described (Rothcray, 1993) but are presumed to be very similar to *F. cuprea*. Goat moths are known from Central Scotland but are rare and have not been positively recorded on Lochlomondside (Knowler, 2010). Combined searching for the larvae of the moth and both species of *Ferdinaudea* in the area around SCENE is an obvious strategy. More details of the Lochlomondside finding of *F. ruficornis* have been written up (Ricarte, *et al.*, 2011).

Species list in alphabetical order

Nomenclature follows Chandler (1998) with any changes or species added since then given in Ball *et al.* (2011). The asterisk * denotes records that were provided by Jeroen van Steenis just south of the field station on 2nd August, 2011, within the same NGR 10Km square as SCENE.

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